Ultrasound-assisted extraction (UAE) and solvent extraction of papaya seed oil : yield, fatty acid composition and triacylglycerol profile.

Abstract

The main objective of the current work was to evaluate the suitability of ultrasound-assisted extraction (UAE) for the recovery of oil from papaya seed as compared to conventional extraction techniques (i.e., Soxhlet extraction (SXE) and solvent extraction (SE)). In the present study, the recovery yield, fatty acid composition and triacylglycerol profile of papaya seed oil obtained from different extraction methods and conditions were compared. Results indicated that both solvent extraction (SE, 12 h/25 °C) and ultrasound-assisted extraction (UAE) methods recovered relatively high yields (79.1% and 76.1% of total oil content, respectively). Analysis of fatty acid composition revealed that the predominant fatty acids in papaya seed oil were oleic (18:1, 70.5%–74.7%), palmitic (16:0, 14.9%–17.9%), stearic (18:0, 4.50%–5.25%), and linoleic acid (18:2, 3.63%–4.6%). Moreover, the most abundant triacylglycerols of papaya seed oil were triolein (OOO), palmitoyl diolein (POO) and stearoyl oleoyl linolein (SOL). In this study, ultrasound-assisted extraction (UAE) significantly ($p < 0.05$) influenced the triacylglycerol profile of papaya seed oil, but no significant differences were observed in the fatty acid composition of papaya seed oil extracted by different extraction methods (SXE, SE and UAE) and conditions.

Keyword: Ultrasound-assisted extraction; Solvent extraction; Papaya seed oil; Fatty acid composition; Triacylglycerol profile